FEASIBILITY STUDY

Fayetteville

Ramsey Street (SR 2311, US 401 Business, US 401)
From Rowan Street / Grove Street (NC 24-87-210)
To the Proposed Fayetteville Outer Loop (TIP X-2DA)

Cumberland County

Division 6

FS-9906A

Prepared by the
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Date

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I. General Description

This feasibility study describes the recommended improvements to Ramsey Street (SR 2311 / US 401 Business / US 401) in Fayetteville. It is recommended that Ramsey Street (SR 2311 / US 401 Business, US 401) be widened from Rowan Street / Grove Street (NC 24-87-210) to the proposed Fayetteville Outer Loop (X-2DA), a distance of 6.9 miles (11.1 km). The recommended cross-section is a six-lane divided curb and gutter section, 96 feet (29.3 m) wide face to face of curbs, with a 16-foot (4.9-m) wide raised grass median and 10-foot (3.0-m) berms. The recommended right-of-way width for this project is typically 120 feet (36.6 m) with no control of access. The project location is shown in Figure 1.

In addition, the Norfolk Southern "VF" railroad line crosses Ramsey Street just north of the Martin Luther King Jr. Expressway (US 401 Business) interchange. Since a railroad grade separation is a very desirable feature at this location, both an at grade railroad crossing and railroad grade separation were studied in this feasibility study.

Alternate 1

Alternate 1 proposes to widen Ramsey Street to a six-lane divided curb and gutter facility from the Rowan Street / Grove Street intersection to the Fayetteville Outer Loop. At the Norfolk Southern Railroad crossing, this alternate proposes to widen the existing at-grade railroad crossing. While an at-grade crossing does not provide the traffic safety benefits of a grade separation, it will drastically reduce the impacts on adjacent properties as well as other transportation facilities in the area (i.e. Martin Luther King Jr. Expressway). Railroad traffic signals and gates will be utilized under this alternate to enhance traffic safety and operations.

It is anticipated that there will be 28 residences and 12 businesses relocated due to this alternate. In addition, this alternate will impact approximately 350 to 400 grave plots in the Lafayette Memorial Gardens, including the relocation of 180 graves. The total cost of the project, including construction and right-of-way, is estimated to be $72,800,000.00.

Construction	$ 40,500,000
Right-of-way	$ 32,300,000
Total Cost	$ 72,800,000

Alternate 2

Alternate 2 proposes to widen Ramsey Street to a six-lane divided facility from the Rowan Street / Grove Street intersection to the Fayetteville Outer Loop but utilizes a railroad grade separation at the Norfolk Southern Railroad crossing. The proposed railroad grade separation provides the maximum the traffic safety and operational benefit, but will require additional right-of-way, significantly restrict access to adjacent properties and impact any future extension of Martin Luther King Jr. Expressway.

It is anticipated that there will be 28 residences and 17 businesses relocated due to this alternate. This alternate will also impact approximately 350 to 400 grave plots in the Lafayette Memorial Garden, and includes the relocation of approximately 180 graves. The total cost of the project, including construction and right-of-way, is estimated to be $81,100,000.00.

Construction	$ 45,100,000
Right-of-way	$ 36,000,000
Total Cost	$ 81,100,000

This study is the initial step in the planning and design process for this project and is not the product of exhaustive environmental or design investigations. The purpose of this study is to describe the proposed project including costs, and to identify potential problems that may require consideration in the planning and design phases.

II. Need for Project

The purpose of this project is to increase the traffic carrying capacity and safety of Ramsey Street (SR 2311, US 401 Business, US 401) in Fayetteville. The City of Fayetteville and the Fayetteville Urban Area MPO support this project.

Ramsey Street is designated as a major thoroughfare in the Fayetteville Thoroughfare Plan and as a principal arterial in the North Carolina Statewide Functional Classification System.

Ramsey Street is currently a multilane curb and gutter facility, 68 feet (20.7 m) wide face to face of curb. This facility is stripped in various configurations from a five-lane section to a six-lane undivided section. Currently, Ramsey Street has a combination of industrial, commercial, residential and educational development throughout the project area.

There are thirteen existing traffic signals along this section of Ramsey Street. These existing traffic signals are at the following locations: Rowan Street / Grove Street (NC 24-87-210) / Green Street (SR 2311), Cumberland Street, Martin Luther King Jr. Expressway (US 401 Business), Kensington Circle / Hillsboro Street, Langdon Street / Colonial Street, Lafayette Memorial Park / VA Hospital Driveway, Country Club Drive, Law Road (SR 1725), Northgate Shopping Center Driveway, Andover Road (SR 1757) / McArthur Road (SR 1600), Stacy Weaver Drive (SR 1615), and Lowdermilk Drive / Fernwood Drive.

Currently, there is only one existing structure within the project study limits. Bridge # R216 carries the CSX railroad "A" line (3 tracks and one service road) over Ramsey Street. This structure was constructed in 1966 and is 57 feet (17.4 m) wide and 108 feet (32.9 m) long. This structure provides approximately 34 feet (10.4 m) of horizontal clearance and 14.75 feet (4.5 m) of vertical clearance for Ramsey Street.

The Norfolk Southern Railroad operates a railway, which crosses the project just north of the Martin Luther King Jr. Expressway (US 401 Business) interchange. This railway carries 2 trains per day at an average speed of 15-mph (24.1 k/hr). Based on the Policy and Procedure Manual, the exposure index for the Ramsey Street crossing is 116,000. Given this information, it would be very desirable to provide a railroad grade separation at this location. However, given the proximity of the adjacent Martin Luther King Jr. Expressway (US 401 Business) interchange, a railroad grade separation would severely impact the existing interchange. In addition, a railroad grade separation at this location would preclude any future extension of Martin Luther King Jr. Expressway without involving major geometric modifications to the approaching roadways.

TIP Project X-0002DA will construct the Fayetteville Outer Loop and provide a Single Point Urban Interchange (SPUI) at Ramsey Street. It is currently in right-of-way acquisition and scheduled for construction in May 2000.

TIP Project U-3842 will provide triple left turn lanes on the Martin Luther King Jr. Expressway (US 401 Business) off-ramp, an exclusive right turn lane on southbound Ramsey Street, and install a railroad traffic signal at the Norfolk Southern Railroad crossing. It is currently scheduled for construction in October 2000.

TIP Project U-3635 will install a closed loop traffic signal system and rehabilitate the existing computerized signal system. It is currently scheduled for construction in January 2000.

The current year Average Daily Traffic (ADT) along Ramsey Street is estimated to be between 23,000 to 39,400 vehicles per day (vpd). For the design year 2025, the estimated traffic volumes on Ramsey Street will range between

41,000 and 57,000 vpd. Truck traffic is estimated to make up five percent of daily traffic.

Currently, the majority of the signalized intersections along Ramsey Street operate with a LOS "D" or better. However, several of the major intersections along this section of Ramsey Street currently operate with a poor "E" or "F" LOS. If no improvements are made, the majority of the signalized intersections will operate with a poor "F" LOS in the 2025 design year. If Ramsey Street is widened to a six-lane divided curb and gutter section, the majority of the signalized intersections along this facility should operate at a LOS "D" or better in the 2025 design year. However, the signalized Country Club Drive (US 401 Bypass) intersection is expected to operate at a LOS "E" in the design year 2025 while the signalized intersection at Grove Street is expected to operate at a LOS "F". Before an acceptable LOS can be achieved at these intersections, additional geometric improvements well beyond the scope of this project will be required.

During the three-year period from September 1995 through August 1998, there were 1265 accidents reported on Ramsey Street within the project limits. There were 1085 injuries reported as a result of these accidents, including 7 fatalities. The accident rate along Ramsey Street within the project limits is 478.73 accidents per 100 million vehicle miles (acc/100mvm). This compares with the 1995 to 1997 statewide rate of 329.65 acc/100mvm for urban United States undivided roadways.

III. Discussion of Alternates / Recommendations

It is recommended that Ramsey Street (SR 2311/ US 401 Business, US 401) be widened from Rowan Street/Grove Street/ Green Street (NC 24-87-210) to the Proposed Fayetteville Outer Loop (X-0002DA), a distance of 6.9 miles (11.1 km). The recommended cross-section is a six-lane divided curb and gutter section, 96 feet (29.3 m) wide face to face of curbs, with a 16-foot (4.9 m) wide raised grass median and 10-foot (3.0 m) berms. The recommended right-of-way width for this project is typically 120 feet (36.6 m) with no control of access. However, additional right of way width will be required at some intersections to accommodate additional auxiliary turn lanes. The project location is shown on Figure 1.

At the Ramsey Street intersections with Grove Street / Rowan Street (NC 24/87/210) / Green Street (SR 2311), Martin Luther King Jr. Expressway (US 401 Business), Rose Hill Road, Country Club Drive (US 401 Bypass), and McArthur Road (SR 1600), the proposed 16-foot (4.9-m) median will need to be widened to 28 feet (8.5 m) to accommodate additional left turn lanes. In addition, an exclusive southbound right turn lane is recommended at the Rosehill Road intersection while dual southbound right turn lanes are recommended at the

Grove Street / Rowan Street / Green Street, Martin Luther King Jr. Expressway, and Country Club Drive intersections.

It should also be noted that, Rosehill Road currently intersects Ramsey Street at a poor skew angle approximately 700 feet north of the Langdon Street intersection. In order to improve the intersection spacing and skew angle, it is recommended that Rosehill Road be relocated approximately 300 feet north. In addition, consideration should be given to signalizing the relocated Rosehill Road intersection. It should be noted that McArthur Road (SR 1600) will require widening (approximately 1000 feet) to receive the proposed dual northbound left turn lanes on Ramsey Street.

An existing structure carries the CSX "A" railroad line (3 tracks and a service road) over Ramsey Street just south of the Martin Luther King Jr. Expressway interchange. This structure has insufficient horizontal clearance to permit widening of Ramsey Street to a six-lane divided facility. Therefore, it is recommended that the existing railroad structure be replaced with a new structure approximately 80 feet (24.4 m) wide by 170 feet (51.8 m) long. In addition, the vertical clearance should be improved because the existing 14.75 feet (4.5 m) is less than desirable.

The Norfolk Southern "VF" railroad line crosses Ramsey Street just north of the Martin Luther King Jr. Expressway (US 401 Business) interchange. Since a railroad grade separation is a very desirable feature at this location, both an at grade railroad crossing and railroad grade separation were studied as alternates in this feasibility study. Alternate 1 and 2 are described as follows:

Alternate 1

Alternate 1 proposes to widen Ramsey Street to a six-lane divided curb and gutter facility from Grove Street to the Fayetteville Outer Loop while an at-grade railroad crossing is utilized at the Norfolk Southern Railroad crossing. While an at-grade crossing does not provide the traffic safety benefits of the grade separation, it will drastically reduce the impacts on adjacent properties as well as other transportation facilities in the area (Martin Luther King Jr. Expressway). In addition, railroad signals and gates will be utilized under this alternate to enhance traffic safety.

It is anticipated that there will be 28 residences and 12 businesses relocated due to this alternate. In addition, this alternate will impact approximately 350 to 400 grave plots in the Lafayette Memorial Gardens, including the relocation of approximately 180 graves. The total cost of the project, including construction and right-of-way, is estimated to be $72,800,000.00.

Construction	$ 40,500,000
Right-of-way	$ 32,300,000
Total Cost	$ 72,800,000

Alternate 2

Alternate 2 proposes to widen Ramsey Street to a six-lane divided facility from Grove Street to the Fayetteville Outer Loop while providing a grade separation is carries Ramsey Street over the Norfolk Southern Railroad. This grade separation requires a new structure approximately 106 feet (32.3 m) wide by 200 feet (61.0 m) long. In addition, the eastbound on-ramp will need to be relocated to the south in order to develop the southbound dual right turn lanes. While the majority of this project will have approximately 120 feet (36.6 m), additional right-of-way will be required to contain the fill in the railroad grade separation as well as the auxiliary lanes at previously stated. The railroad grade separation will provide the maximum traffic safety benefit for this location. However, a grade separation will require additional right-of-way, restrict access to adjacent properties and impact any future extension of Martin Luther King Jr. Expressway.

It is anticipated that there will be 28 residences and 17 businesses relocated due to this alternate. This alternate will also impact approximately 350 to 400 grave plots in the Lafayette Memorial Garden, including the relocation of approximately 180 graves. The total cost of the project, including construction and right-of-way, is estimated to be $81,100,000.00.

Construction	$ 45,100,000
Right-of-way	$ 36,000,000
Total Cost	$ 81,100,000

IV. Other Alternates Considered

The initial feasibility study request included Ramsey Street from the Fayetteville Outer Loop to Slocumb Road (SR 1710). This section is an existing five-lane curb and gutter facility. No geometric improvements are currently recommended along this section because the existing five lane curb and gutter section is sufficient to accommodate the projected 2025 design year traffic volumes.

V. Additional Comments

An environmental screening was not conducted for this study. However, there are properties within the project limits listed on the National Register of Historic Places. St. Joseph Episcopal Church (NR# 739) is located in the northwest quadrant of the Ramsey Street/Moore Street intersection. The Belden Horne House (NR# 193) is located on the westside of Ramsey Street just north of St Joseph Episcopal Church. In addition, Confederate Breastworks (NR# 756) are located on the VA Hospital grounds east of Ramsey Street. In order to

minimize the impacts on these historic properties, it is recommended that all widening between Moore Street and Webb Street be to the east of Ramsey Street, while the widening in front of the VA Hospital should be to the west. However, it should be noted that this widening to the west would impact the Lafayette Memorial Park.

Based on our review no impacts to wetlands or stream crossings are expected under this project.

Based on maps at the Department of Environment, Health & Natural Resources - Natural Heritage Section, no threatened or endangered species were identified in the project corridor.

The NCDOT Division of Bicycle and Pedestrian Transportation has requested that bicycle accommodations be provided under this project where appropriate. Therefore, the cross-section alternates for this project include wide outside lanes needed for bicycle traffic.

The Traffic Congestion and Engineering Operations Unit has indicated that intelligent transportation system (ITS) improvements may be likely along this corridor. However, the ITS study for Fayetteville is still on going and the exact type and quantity of devices has not been determined.

A transportation benefit analysis was not completed for this project because the proposed improvements are beyond the capabilities of the benefit analysis package developed by the Statewide Planning Branch. However, it can be assumed that the proposed six-lane divided section will significantly improve traffic safety and operations when compared to the existing condition because Ramsey Street currently has a problem with indescriment left turn movements. The proposed six-lane divided curb and gutter section should improve the overall capacity of this facility while maximizing traffic safety by providing positive control of left turn movements along the corridor. The proposed intersection improvements should also enhance the traffic safety and operations of the facility.